the personal culture of the individual; for this reason it is sometimes referred to as a scientific degree (as opposed to professional). It was destined at first exclusively for foreigners, who would not wish to conform to the requirements of the professional curricula. In March, 1918, however, it was opened to Italians as well."]—Degrees for foreigners;—["At present no degree of higher grade than the regular laurea or the new doctorate is conferred in Italy; and from what precedes, it is obvious that the requirements for these degrees are less in amount than the requirements for the doctorate in Graduate Schools of good standing in America. It must be borne in mind, however, that for Americans the successful following of a course of university study in Italy implies residence abroad and mastery of the Italian language"]—The language; Choosing a University; —["Concise descriptions of all the Universities and other higher institutions in Italy, including libraries and learned societies, with lists of the professors and other officials, will be found in the *Annuario degli Istituti Scientifici Italiani*, compiled by Professor Silvio Pivano for the Associazione Italiana per l'Intesa Intellettuale fra i Paesi Alleati ed Amici (Rome, 1918; price 10 lire)."]—Special provisions 1919–1920.

Number Stories of Long Ago. By D. E. SMITH. Boston, Ginn, 1919. 12mo. 7 + 136 pp. + 8 plates in color. Price 48 cents.

Extract from "Preface number two for the grown-ups, and not worth reading"—

". . . This book is intended for supplementary reading in the elementary school. It is written in nontechnical language, and the effort has been made to connect with the history enough of the human element to make it more interesting than any mere recital of facts. With it there is also joined something of the history of writing materials, this being connected naturally with the story of our numbers. Chapters I–VIII can easily be read aloud, and the Question Box at the end of each chapter can be used as a basis for conversation or for written work.

"The facts stated in the book are as nearly exact as the circumstances permit. It is not to be expected, however, that changes in the form of various numerals will be considered. Such changes are of no moment in a work of this nature and do not contradict the statement that the historical facts are presented with substantial accuracy.

"It is the author's hope that this little series of human incidents will create a new interest not merely in the study of arithmetic but in the story of the development of our civilization."

The solutions of the problems in chapters IX and X of *Number Stories* have been given by D. E. SMITH in a fourteen page pamphlet entitled: *Number Puzzles before the Log Fire.*

Essentials of Algebra and Geometry. By F. M. MORGAN. New York, Association Press, 1919. 12mo. 58 pp.

This is the second of the series, published under the direction of Professor J. W. Young for the National War Work Council of Young Men's Christian Associations, to which reference has been made already in the MONTHLY (March, 1919). It contains six lessons preparatory to the study of trigonometry. The requirement has been cut down to a minimum and it is intended that everything given shall be of importance. There are numerous "Exercises," "Oral review exercises" and "Review exercises."

NOTES.

The *Harvard Alumni Bulletin* for April 24, 1919, contains the report by a Faculty Committee (of which Professor G. D. BIRKHOFF is a member) on General Final Examinations for Degrees. Such examinations are not to be used in the Divisions of Mathematics and the Natural Sciences.

The twenty-page *List of Members, 1919,* of the Indian Mathematical Society contains 195 names. Of these one name is that of a "Patron," one of an "Honorary Member," and nine of "Life Members." Of the 185 "Ordinary Members" only one resides outside of India.

The thoroughly unsound foundation for J. M. Child's contention that "Isaac Barrow was the first inventor of the infinitesimal calculus" was set forth clearly by Professor Cajori in this MONTHLY for January, 1919. It seems unfortunate, therefore, that the contention is whole-heartedly accepted by such an influential journal as *Science Progress.* (Cf. the issue for April, 1919.)

Announcements of the Cambridge University Press: Sir Thomas L. Heath's *Euclid in Greek* (Book 1) will include the Greek text of Euclid's first book together with an English translation and notes; the author holding the view that neither Euclid nor Greek can ever be more than apparently in abeyance—New and completely revised editions of Love's *Elasticity* and Lamb's *Infinitesimal Calculus* are in the press—Professor J. H. Jeans has written a new work entitled *Problems of Cosmogony and Stellar Dynamics,* which it is hoped to publish this autumn.

Revista de la Sociedad Matemática Española ceased publication with the completion of año 6 in July, 1917. In January, 1919, a new mathematical periodical, entitled *Revista matematica Hispano-Americana,* appeared at Madrid under the editorship of J. Rey Pastor. It is the Sociedad's official organ. At this writing five numbers have been received in America. Their contents include: "Notas sobre la teoria de grupos"[1] by G. A. Miller (pages 148–152), a sketch and fine portrait of Don Eduardo Torroja, 1847–1918, (pages 1–13), and a portrait and sketch of Hadamard and his scientific work (pages 65–80, 105–112). In the latter is given a list of 135 papers published by Hadamard 1888–1914.

We have also received Tome 1, no. 1 of Professor Z. G. de Galdeano's new periodical: *Supplemento a la Revista matemática Hispano-Americana, boletin, de critica, pedagogia, historia y bibliografia* (32 pages). Professor Galdeano has also written or edited four other periodicals: (1) *El Progreso Matematico,* 7 vols., 1891–95, 1899–1900; (2) *Boletin de critica, ensenanza, y bibliografia,* 2 nos., 1907–08; (3) *Supplemento a la revista de la Sociedod Matematica Española,* 3 nos., 1917; (4) *El progreso scientifico, revista semestral,* 1 no., July 1918 (See this MONTHLY, March, 1919, p. 118).

L. Huxley has recently published his *Life and Letters of Sir Joseph Dalton Hooker,*[2] the distinguished botanist and traveller who died in 1911 at the age of 94. The first volume contains interesting particulars (pages 538–546) of the famous x Club[3] of which there were 240 meetings from the first in 1864 to the last in 1892. No additions were ever made to the original membership of nine: Hooker, T. H. Huxley, John Tyndall, Herbert Spencer, Edward Frankland, John Lubbock, George Busk, and the mathematicians William Spottiswoode and T. A. Hirst. The first break in the circle was caused by the death of Spottiswoode in 1883.

[1] In part, a translation of "Remarks on the bearing of the theory of groups" in *Tôhoku Mathematical Journal,* vol. 11, 73–78, December, 1914.

[2] New York, Appleton, 1918.

[3] See also *Life and Letters of T. H. Huxley,* Vol. 1, 368 *seq.*; *Sketches from the Life of Edward Frankland,* page 148 *seq.*; and Huxley's reminiscences of John Tyndall in the *Nineteenth Century,* Jan., 1894.

There was only one meeting of the Club after Hirst's death in February, 1892.

The second volume of the *Life* contains the following extracts (pages 126, 336) culled from Hooker's letters:

(1) To *Charles Darwin*, August 5, 1871: "I have been reading W. Thomson's[1] address [at the Edinburgh meeting of the British Association for the Advancement of Science in 1871], and am anxious to hear your opinion of it. What a belly-full it is, and how Scotchy! It seems to be very able indeed, and what a good notion it gives of the gigantic achievements of mathematicians and physicists—it really makes one giddy to read of them. I do not think that Huxley will thank him for his reference to him as a positive unbeliever in spontaneous generation—these mathematicians do not seem to me to distinguish between un-belief and a-belief—I know no other name for the state of mind that is traduced under the term scepticism. I had no idea before that pure mathematics had achieved such wonders in practical science, and I wonder how far Thomson's statements will be contested. The total absence of any allusion to Tyndall's labors, even when comets are his theme, seems strange to me."

(2) To *Rev. J. D. La Touche*, Dec. 24, 1893: "What you say of A, B, and C does not surprise me. They are 'ne plus ultra' mathematicians, have not a conception of biological science, and in fact are only *half intellects* (I suppose I deserve to be burned), but so it is, that I have often found such men to be impervious to reasoning out of their own circle, in matters of natural science. With biologists, who have to found everything, beyond pure observation, on circumstantial evidence, the case is quite different. For hundreds of biologists who are good mathematicians, you will not find ten vice versa."

ARTICLES IN CURRENT PERIODICALS.

BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY, volume 25, no. 7, April, 1919: "Mathematics in war perspective" by L. E. Dickson, 289–311 [Presidential address delivered before the American Mathematical Society, December 27, 1918]; "A partial isomorph of trigonometry" by E. T. Bell, 311–321; "The trains for the 36 groupless triad systems on 15 elements" by Louise D. Cummings, 321–324; "A theorem on areas" by T. Hayashi, 324–325; "Concerning the definition of a simple continuous arc" by G. H. Hallett, Jr., 325–326; "The transformation of a regular group into its conjoint" by J. E. McAtee, 326–329; "Notes" and "New publications," 329–336.—No. 8, May: "The life and services of Maxime Bôcher" by W. F. Osgood, 337–350; "A theorem on linear point sets" by H. Blumberg, 350–353; "A general form of Green's Theorem," 353–357; "Rotating cylinders and rectilinear vortices" by H. Bateman, 358–374; Review by A. Dresden of Shaw's *Lectures on Philosophy of Mathematics* (Chicago, 1918), 374–377; Review by R. D. Carmichael of Macrobert's *Functions of a complex variable* (London, 1917), 377–378; Review by A. Emch of Montessus de Ballore's *Lecons sur les fonctions elliptiques en vue de leurs applications* (Paris, 1917), 378–379; "Notes" and "New Publications," 379–384.—No. 9, June: "The March meeting of the American Mathematical Society at Chicago," 385–392; "The April meeting of the San Francisco section, 393–397; "On a certain generation of rational circular and isotropic curves" by Arnold Emch, 397–404; "The self-dual plane rational quintic" by L. E. Wear, 405–408; "Groups containing a relatively large number of operators of order two" by G. A. Miller, 408–413; "The derivative of a functional" by P. J. Daniell, 414–416; Review by L. W. Dowling of *Scritti matematici offerti ad Enrico D'Ovidio*, etc. (Torino, 1918), 417–422; "Shorter Notices," 422–424; "Notes," 424–429; "New Publications," 429–432.

JOURNAL OF ACCOUNTANCY, New York, volume 27, 1919, January: "Practical interpolation" by A. S. Little, 48–60.—April: "Rapid calculation of compound interest processes" by F. C. Belser, 241–248; "Mathematics of credit extension" by F. Thulin, 259–267.

JOURNAL OF EDUCATIONAL PSYCHOLOGY, Hershey, Pa., volume 10, no. 2, February, 1919: "English and mathematical abilities of a group of college students" by E. C. Tolman, 95–103. [Based on observations made on an introductory class in psychology at the University of California made up of sophomores, juniors and seniors (men and women)].

[1] William Thomson (1824–1907), afterwards Lord Kelvin, was the son of James Thomson who became professor of mathematics at the University of Glasgow where William matriculated when he was a little more than ten years of age, and was afterwards to be for fifty-three years a "professor of Natural Philosophy."